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ALNAV 50

Reports indicate serious personnel hazards may exist due to possible faulty grounding of 16 mm. projectors. Pending thorough investigation to determine cause of trouble holders of types IC/QEM-1A, IC/QEB-1D, and AQ-2(1) projection equipments are directed immediately to determine that black ground conductor in equipment power cables is actually connected to ship's ground. Use of white or red conductors as ground is hazardous and could result in serious personnel injury. As added precaution before connecting projector to power source connect an additional ground wire between projector and ship's hull. (30 Sept 1953)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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SPECIAL NOTICE

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Scalene Node Biopsy

In 1949, Daniels reported the use of scalene lymph nodes in the diagnosis of certain intrathoracic diseases. He reported positive findings in scalene nodes in 2 cases of Boeck's sarcoid, 2 carcinomas of the lung, and 1 case of silicosis with demonstration of the silica particles by means of a Nicol prism. Storey and Reynolds recently reported positive findings in scalene nodes in 3 cases of Hodgkin's disease, 1 carcinoma of the lung, and 1 Boeck's sarcoid. Single cases of successful diagnosis by use of the procedure were reported by Weiss, Campbell, and Budenz (Boeck's sarcoid) and by Johnson and MacCurdy (histoplasmosis).

This report adds nothing fundamentally new to Daniels' original contribution but is intended as an additional report which may be of value in estimating the relative value of this type of biopsy in a variety of intrathoracic conditions.

The basis of this type of biopsy lies in the fact that the lymph nodes anterior to the scalenus anticus muscle are connected to the mediastinal nodes. Thus, pulmonary parenchymal lesions which might involve mediastinal nodes are reflected in the scalene nodes. The same is true of systemic conditions directly involving the mediastinal nodes. In a very real sense, this simple scalene node biopsy is a biopsy of the mediastinal nodes without the necessity of entering the thorax. The percentage of positive findings in the nodes varies with the pathologic conditions and the accuracy of the dissections.

The total material of the present study consisted of 205 scalene node dissections, including 17 bilateral dissections, in 187 patients.

The average age of the group was 36.4 years. The youngest patient was 17 years old and the oldest was 74. As many of the patients were young soldiers or inductees, it is of interest to point out that 37.5% were 25 years of age or under.

In general, the indications for scalene node biopsy may be stated in an exaggeratedly simple manner by advising that this biopsy be done whenever it is advisable to know the contents of the mediastinal nodes. In detail, the indications are as follows: Scalene node biopsy is of value in all cases of proved bronchogenic carcinoma in order to uncover at least a portion of the cases in which the carcinoma has extended beyond the immediate confines of the chest. It should be done in all cases of suspected bronchogenic carcinoma. This will actually include all roentgenographic opacities not otherwise identified, especially the small, isolated, often peripheral, asymptomatic lesions. In instances of hilar and/or mediastinal roentgenographic enlargement, scalene node dissection will reveal many cases of Boeck's sarcoid, enlarged tuberculous mediastinal nodes, lymphosarcoma, and Hodgkin's disease. Cultures of scalene nodes can result in isolation of specific fungi in many cases of pulmonary fungal infection not otherwise diagnosed. The value of isolation of tubercle bacilli from these nodes in the diagnosis of a tuberculous

pulmonary parenchymal lesion remains to be proved. In cases of pulmonary infiltrates or infiltrations suspected of being metastatic tumors, scalene node biopsy material may reveal the exact microscopic type of tumor and, in conjunction with clinical findings, may lead to the prompt detection of the primary site of the neoplasm. In such cases, in the absence of autopsies, if the procedure had no other value, it should improve the accuracy of vital statistics. Finally, scalene node dissection should be of value in cases of medico-legal interest (pneumonoconiosis) wherein the offending foreign-body substances may be identified. (Am. Rev. Tuberc., Oct. 1953, L. M. Shefts, A. A. Terrill, and H. Swindell)

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Alcohol-Induced Pain in Hodgkin's Disease

Alcohol, when taken by patients with Hodgkin's disease, may in some cases give rise to severe pain. When present this symptom is of considerable clinical value--by focusing attention to areas of active disease, and by serving as a reliable guide when judging response to treatment. No mention is made of this curious intolerance to alcohol in any of the classical textbooks or monographs dealing with Hodgkin's disease, and no case report describing this symptom appears to have been published in Great Britain so far. Only 2 references to this subject could be traced in the medical literature. Hoster, in America, referring briefly to this phenomenon in one of his articles on Hodgkin's disease, states that in a number of his cases pain occurred or, if already present, was increased at the site of Hodgkin's deposits shortly after intake of alcohol-containing drinks and that such pain was frequently replaced by localized anesthesia if adequate amounts of alcohol were taken. Verbeeten, in Holland, quotes case histories of 4 patients with Hodgkin's disease (3 male and 1 female) who suffered pain of such intensity after drinking alcohol that they all became teetotal. After x-ray therapy, one of these patients was able to take alcohol again without ill effects; no information is given on the fate of the other 3 cases.

In view of the scanty published data on the subject, 2 cases are placed on record.

In both cases alcohol produced localizing signs pin-pointing, as it were, the site of active lymphadenomatous deposits in advance of clear-cut radiographic changes. Successful treatment, in both cases, was associated with instantaneous disappearance of symptoms which once more preceded the return to normal of radiographic appearances. Such individual hypersensitivity to alcohol, which seems to be confined to sufferers from Hodgkin's disease, is therefore of considerable clinical value as it may serve to betray the presence of active lymphadenoma at a time when the disease gives rise to few signs and so make possible early diagnosis and institution of appropriate treatment before symptoms become severe and unmistakable. The result of treatment

in turn may be assessed by means of an alcoholic "test drink." It may prove useful to include such "diagnostic drinks" among the routine investigations carried out when following up cases of this type and to instruct the patients to report immediately should at any time intake of alcohol be followed by severe pain. What produces the pain in Hodgkin's disease, and whether it is due to localized edema as suggested by Hoster, is an intriguing question. So far there is nothing to suggest that alcohol has a deleterious effect on the course of Hodgkin's disease. (Brit. M. J., Sept. 12, 1953, J. G. de Winter)

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Aureomycin in the Prophylaxis of Rheumatic Fever

Despite recent progress, the prevention of rheumatic fever remains a challenging problem. The investigation of this subject is made difficult by the lack of basic knowledge concerning the disease itself. Rheumatic fever is widely recognized as a frequent and potentially serious condition; yet its actual incidence cannot be accurately determined. Frequently, the clinical picture is quite atypical: there may be no arthritis or arthralgia; and the disease may be extremely severe or very mild. No precise diagnostic procedure is available. Doubtless, therefore, numerous cases are overlooked and misdiagnosed. Even so, it is estimated that 200,000 to 250,000 persons in the United States develop rheumatic fever each year, with 30,000 to 60,000 deaths resulting annually. It is believed that there are more than 460,000 patients with rheumatic heart disease in this country and that this is the most common cause of cardiac death in childhood and young adults. As a result of a survey in New York State, rheumatic heart disease is said to cause more than 5 times as many deaths as whooping cough, measles, epidemic meningitis, and anterior poliomyelitis combined. Although the highest incidence occurs in the decade between 5 and 15 years of age, its frequency and seriousness in young adults were emphasized by medical studies in the Armed Forces during World War II.

The prevention of rheumatic fever and rheumatic heart disease is further complicated by the fact that the exact etiology of this condition has not been definitely established. Heredity, nutrition, housing, general standards of hygiene, nonspecific infection, trauma, surgery, and many other factors have been implicated. However, it is generally believed that in the vast majority of cases, initial and subsequent episodes of rheumatic fever follow infections of the upper respiratory tract by Group A beta-hemolytic streptococci.

In general there have been 2 major approaches to prophylaxis in rheumatic fever: prompt and adequate treatment of streptococcal infections in all persons and efforts to prevent the occurrence of such infections in rheumatic persons--those who have had one or more previous episodes of rheumatic fever. It has been demonstrated that rheumatic fever subsequently

develops in 3 to 6% of cases in streptococcal epidemics; among those who have had rheumatic fever previously the incidence is much higher. Therefore, the American Heart Association Council on Rheumatic Fever and Congenital Heart Disease has recently recommended that adequate therapy be instituted as soon as the diagnosis is reasonably established. Penicillin and aureomycin are recommended in sufficient dosage for 10 to 14 days. It is further advised that the following preparations not be employed: penicillin lozenges, penicillin followed by sulfonamides, and sulfonamide drugs.

This article is a report of the use of aureomycin as a prophylactic agent in 35 rheumatic patients. Comprehensive toxicity studies and bacterial-sensitivity determinations are presented.

Persons with a history of rheumatic fever are relatively susceptible to streptococcal infections, and recurrence may be anticipated in 50 to 70% of cases of rheumatic fever. A most important reason for long-term prophylaxis is the fact that possibly 40% of streptococcal infections are so mild that medical attention and treatment are not sought. Nevertheless, rheumatic fever may result from such minimal involvement.

Aureomycin appears to be an effective prophylactic agent in rheumatic fever. This antibiotic may be less dangerous for prolonged use than either sulfadiazine or penicillin. Extensive studies revealed no evidence of the development of significant resistance by Group A beta-hemolytic streptococci to prolonged aureomycin therapy. This antibiotic should be of great value in cases in which patients are unable to tolerate either sulfonamides or penicillin. (New England J. Med., Sept. 3, 1953, L. V. McVay, Jr., and D. H. Sprunt)

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Reactivation of Rheumatic Fever Following Mitral Commissurotomy

Mitral commissurotomy is a procedure designed to relieve obstruction at a mitral valve damaged by rheumatic fever. It is not intended to control the rheumatic state. On the contrary, a surgeon performing a mitral commissurotomy operates in a field that is potentially the seat of subclinical active infection. So long as there is no specific method of controlling rheumatic fever the possibility exists that such an operation may activate rheumatic infection to clinical recognition or spread rheumatic infection subclinically. This forms the basis for the almost universal acceptance of clinically active rheumatic fever as a contraindication to mitral commissurotomy.

It is well known that progressive rheumatic cardiac deterioration may occur in individuals in whom rheumatic activity cannot otherwise be recognized on clinical grounds and who, at necropsy, have characteristic stigmata of active rheumatic carditis. Indeed, it is because of the frequency of such

findings at necropsy in children or adolescents dead of cardiac failure due to rheumatic heart disease, that many students of rheumatic fever think that any rheumatic child or adolescent with progressive cardiac failure has active rheumatic carditis. One could anticipate, therefore, an occasional postoperative unmasking of obviously clinically active rheumatic fever in individuals who were preoperatively regarded as having inactive or doubtfully active rheumatic fever. The authors have seen such occurrences. Fortunately in their experience, they are rare, perhaps because of the care used to exclude from operation individuals who have any manifestations that can be interpreted as possibly due to active rheumatic fever.

However, the authors have observed a distressingly high incidence of a combination of events that occurs after a variable latent period following mitral commissurotomy. As far as they know, this combination of events, which has as its common denominator pain and fever, does not occur following any other type of nonrheumatic cardiac or pulmonary surgery. This report describes the incidence and character of these events that the authors regard as a reactivation of rheumatic fever.

The records of 183 consecutive individuals subjected to mitral commissurotomy were examined. Four were excluded because of the immediate precipitation by operation of active rheumatic fever. None of the other 179 was regarded preoperatively as having active rheumatic fever even in retrospect. Of these 179, 67 (37.4%) had pain of delayed onset after discharge from the hospital. Of these 67, 43 (24.0% of the 179) were recognized to have pain and fever of delayed onset. The character of the delayed pain occurring in those with pain alone was similar to that occurring in those with pain and fever. Although the authors have some evidence to suggest that in those with pain of delayed onset without recognized fever, the presence of fever may have been overlooked or suppressed by medication, only those 43 individuals with pain and fever of delayed onset form the basis of this report. The follow-up period varied from 6 to 24 months.

Unfortunately, there is no specific test for rheumatic activity. The authors realize full well the difficult differential diagnosis of rheumatic fever, greatly enhanced by the effects of an operation upon the heart. The diagnostic problems arising in the immediate postoperative period are particularly difficult and will be the subject of a subsequent report. It is, however, inconceivable to the authors that the delayed phenomena described are simply manifestations of surgical trauma. Rather, they look upon the surgical operation as a trigger mechanism that sets in motion a series of events that in time rise to clinical manifestations. The pathogenesis of this mechanism at this time is purely speculative. (Circulation, Oct. 1953, L. A. Soloff, J. Zatuchni, O. H. Janton, T. J. E. O'Neill, and R. P. Glover)

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Phenylbutazone

A great deal of controversy has arisen around the newest of the anti-rheumatic drugs, phenylbutazone (marketed under the trade name of Butazolidin) owing principally to the fact that it causes serious toxic side effects in some patients, although in most instances these effects are minor and rapidly reversible.

There is no doubt in the opinion of almost all observers who have written about phenylbutazone that it provides varying degrees of relief of pain in a majority of patients with rheumatic diseases, and to a lesser degree decreases swelling and increases mobility of the affected parts. The relief usually occurs within 2 or 3 days after administration is begun and the effect is completely dissipated within 7 to 10 days after it is discontinued. It is important to recognize that phenylbutazone, like the steroids, has no curative properties.

The most dramatic effect of the drug is in acute gout, where it promptly brings about pronounced relief in 80 to 85% of cases--sometimes complete remission within 24 to 48 hours. Phenylbutazone is also very effective in relief of pain in nonarticular rheumatism, such as "painful shoulder" and bursitis, but remissions may not be as complete or lasting as in gout.

In rheumatoid arthritis, 50 to 80% of patients get varying degrees of subjective relief of pain. The drug seems to be slightly more effective in the spondylitic than in the peripheral type of the disease.

Phenylbutazone is also effective in the relief of symptoms in degenerative arthritis in a smaller proportion of patients, but its use in this disease is not ordinarily advised because of the age of the patients.

Toxic reactions occur in about 25% of patients receiving phenylbutazone, but only in about 10% is it necessary to discontinue administration. The common reactions are gastrointestinal upset, edema, and rash. Less common is the occurrence of more generalized allergic reactions with stomatitis, purpura, hematuria, and agranulocytosis. Several patients have died of agranulocytosis. Reactivation of pre-existing peptic ulcer has occurred, and several cases of unexplained gastrointestinal bleeding have been reported. Another reaction not reported, which the author has observed, is moderate to pronounced increase in blood pressure, with or without obvious edema.

Phenylbutazone is a valuable adjunct to the armamentarium available in the treatment of rheumatic diseases, but it is also a potentially dangerous drug and must be treated as such. Certainly it should not be used in cases in which other less toxic drugs will provide as adequate, or nearly as adequate, relief.

Phenylbutazone should not be given to patients with a history of peptic ulcer and it should be used with great caution, if at all, in patients with a history of allergic reaction to drugs. In patients over 60 years of age and

in others with known cardiac disease, or any disease complicated by edema, the intake of sodium should be restricted, if phenylbutazone is to be given at all.

Dosage of the drug should obviously be kept at a minimum, never should it exceed 800 mg. daily.

The drug should be taken with food, or with an anti-acid preparation that contains no sodium, to minimize gastric irritation. If the patient is given adequate amounts of phenylbutazone yet has no relief of symptoms within 4 to 7 days, administration should be discontinued, for it is extremely unlikely that any improvement will occur.

The blood should be examined before administration of the drug is started, at frequent intervals during the institution of treatment, and regularly thereafter as long as therapy is continued. (California Med., Sept. 1953, W.G. Snow)

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Homologous Serum Jaundice and Pooled Plasma

This article has two purposes: first, to present further data that by now seem to demonstrate conclusively that pooled plasma drawn from carefully screened, healthy donors and stored for 6 months or more in a liquid state at room temperature, carries less risk of homologous serum jaundice than does whole blood; and second, to discuss in detail the objections that have been raised to this procedure.

The important constituents of viruses and plasma are protein in nature. Because many proteins are labile, many methods have been designed to preserve them in their near native state. The most commonly employed procedure is lyophilization (drying). This procedure has been extensively employed in the preservation of plasma and also for the preservation of various virus agents. In the case of plasma, which may be contaminated with the virus of homologous serum jaundice, drying preserves not only the proteins of pooled plasma, but also the proteins of the virus of homologous serum jaundice. Lyophilized plasma was used in many of the patients reported to have developed homologous serum jaundice following plasma transfusion. Deep freezing and refrigeration have also been used as a means of increasing the survival rate of viruses and for preserving proteins, including plasma. This accounted for most of the cases of homologous serum jaundice from plasma.

Since September 15, 1942, the University of Chicago Blood Bank has stored its pooled plasma in a liquid state for 6 months or longer before dispensing it to patients. This method was originally adopted to allow deterioration of any abnormally high iso-agglutinin titer any particular plasma pool might contain. All plasma produced in that blood bank was pooled from outdated citrated blood within 5 to 8 days after its withdrawal from the donor.

ACD solution was not used. Each pool contained plasma contributed by 25 to 30 donors. The size of the pool was limited by the 6-liter container employed in pooling. All plasma was stored out of reach near the ceiling of the room where the daily temperature ran between 76° and 96° F. throughout the year. Each pool was cultured for aerobic and anaerobic bacteria.

No cases of homologous serum jaundice were detected from this plasma in spite of donor exposure 11 to 14 times greater in those patients receiving plasma compared with those given only blood. Thirty-one cases of this complication have occurred in those patients receiving only blood.

Many of the previous objections to the procedure of room storage of pooled plasma before use appear unwarranted.

It is pointed out that the human volunteer studies thus far conducted do not duplicate or necessarily apply to the problem of plasma pooling encountered in the community blood bank. Moreover, the volunteer data seem to support rather than contradict the authors' clinical experience from liquid plasma in spite of the fact that in the volunteer studies, the source of the virus employed was from patients currently sick with homologous serum jaundice. The differences in titre and virulence of viruses obtained from patients at the height of their disease and from the healthy donor who is a "carrier" of the virus is discussed. It is the healthy "carrier" donor who seldom gives any history suggestive of homologous serum jaundice, either previous or subsequent to his donation, who is responsible for the disease encountered in the transfusion of pooled plasma or blood in clinical practice. The high titred virulent virus obtained from the patient sick with homologous serum jaundice, as employed in the volunteer studies, is not encountered in normal blood banking procedures.

The room-temperature-storage procedure as used at the University of Chicago Blood Bank offers a practical and simple method for preparing plasma pools in community blood banks. It leaves unsolved, however, the prevention of this complication from blood transfusions. When a safe method to rid blood of this hazard is found, it should also solve the pooled plasma problem, regardless of whether the final product is stored in the liquid, dried, frozen, or refrigerated states. (Ann. Surg., Sept. 1953, J. G. Allen, H. S. Inouye, and C. Sykes)

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Management of Essential Hypertension

The obvious first step in deciding about treatment is establishing the presence of arterial hypertension. An acceptable abnormal level of blood pressure is 150 systolic over 90 diastolic when found consistently in serial, random determinations. It should be recognized that in most patients the blood pressure taken under the potentially threatening circumstances of the physician's office is almost invariably the highest pressure. If repeated

examinations confirm arterial hypertension the next step is to exclude the hypertensive states that are curable.

Coarctation of the aorta is diagnosed by comparing arm and leg pulses and blood pressures. Pheochromocytoma is screened by the Regitine test, and unilateral kidney disease requires pyelographic and other genitourinary investigation. Another hypertensivelike condition which should be rigorously excluded is that occurring in older atherosclerotic subjects, usually over 50, in whom the systolic pressure may be 180 to 200 mm. Hg and the diastolic under 90. This condition, a product of atherosclerosis with loss of aortic elasticity, does not represent arteriolar vasoconstriction and requires no hypotensive therapy. If the renal sources of high blood pressure, chiefly glomerulo- or pyelo-nephritis, are ruled out next, then only idiopathic or essential hypertension remains.

In planning treatment it is helpful to classify essential hypertension into 3 main groups: (1) mild benign, (2) intermediate benign, and (3) premalignant and malignant. The prominent factors in determining the patient's classification are the level of diastolic blood pressure, the degree of vascular disturbances in the heart, brain, or kidney, and the presence of symptoms. Frequent serial observations are necessary.

Group I consists of patients, most often women, with mild to moderate diastolic elevation in the range of 90 to 115 mm. Hg. They are often over 50 years of age when the hypertension is discovered and are free of vascular lesions and cardiac or renal insufficiency. The patients tolerate this elevation well. Generally speaking, these patients require no more than expectant and general management.

The group III patients can also be dealt with directly. Here, the patient is usually a man under 45, with persistent diastolic elevation of 130 mm. Hg and over and associated vascular lesions affecting the retina, heart, brain, and kidney. There is prompt progression of both pressure levels and vascular lesions under observation. In this group the evidence is overwhelming for increased vascular complications and shortening of life. These are the individuals with the premalignant or the malignant form of the disease who urgently need potent therapeutic agents or sympathectomy.

The major problem in determining the need for specific treatment involves group II patients, with intermediate benign hypertension, in whom blood pressure ranges between the above-described extremes. This group is made up of patients of either sex whose diastolic pressures range from 115 to 125 mm. Hg in the absence of pronounced retinal, cardiac, or renal lesions. Serial study over 6 to 12 months shows no progression.

It would appear then that patients in this group should be treated vigorously only when there is serially increasing elevation of the diastolic blood pressure or progression as manifest by advancing retinal, cardiac, electrocardiographic, or renal changes. It should be emphasized that greater experience and follow-up data with the newer hypotensive drugs may bring forth indications for earlier treatment of the group II subjects.

Because it is obvious that progression of the hypertensive vascular process is a large factor in planning treatment, base line studies are essential. These should include urinalyses for albuminuria and formed elements, the phenolsulfonphthalein dye excretion test, the urine concentration test for renal function, and careful examination of the retinas for the state of the blood vessels and retinopathy. When practicable it is helpful to include an x-ray film to determine the size of the heart and left ventricle and an electrocardiogram to appraise left ventricular function.

Group I subjects require no specific therapy. Every effort should be made to de-emphasize the blood pressure in the patient's mind. Because psychogenic features are often prominent, they should be alleviated when possible. Living habits must be adjusted to provide ample rest bolstered by sedation with chloral hydrate or barbiturates as necessary. If practicable, vacations or periods away from work should be arranged at intervals of 3 or 4 months. Obesity when present should be modified to the ideal weight. Strenuous or stressful loads of physical exertion are curtailed to moderate activity.

Treatment of group II patients includes the measures employed in group I, in addition to which may be added sodium restriction. It is generally agreed that severe, rigid curtailment of sodium intake is necessary to achieve results. If 4 to 6 weeks of thorough salt deprivation are ineffective, this approach may be abandoned. In patients with diastolic pressures of 120 to 125 mm. Hg, with headache, dizziness, fatigability, or other symptoms, a course of treatment with Apresoline or Veratrum viride is practicable while the patient remains ambulatory. Unfortunately, with the Veratrum preparations the hypotensive dose is associated with uncomfortable side-effects in the great majority of patients.

The group III subject is best managed by a period of hospitalization when he is cautiously regulated on oral Veratrum, or parenteral hexamethonium (C6) in combination with 1-hydrazinophthalazine. The potent hypotensive action of C6 makes it mandatory that this agent be employed only under strict medical supervision. In view of variations in absorption, oral dosage with this agent is dangerous and is not recommended. After determination of the hypotensive dosage of C6 it is often possible to train the patient in self-administration for ambulatory management upon discharge from the hospital.

In the group III subject, when the properly applied potent hypotensive drugs have been ineffective, lumbodorsal sympathectomy is indicated. There is evidence that the operation will lower blood pressure and prolong life expectancy in about 10% of patients with the more severe forms of hypertension. Bilateral adrenalectomy, alone or in combination with sympathectomy, is to be considered in the experimental phase at the present time. (M. Ann. District of Columbia, Sept. 1953, J. M. Evans)

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Multiple Etiology of Obesity

The practical importance of obesity as a medical problem has received increasing attention in recent years. Metropolitan Life Insurance Company statistics show that in their insured population the mortality between ages 20 and 64 is 50% greater among overweight than among normal-weight men and women. The mortality from cardiovascular and renal diseases is increased by more than 50%, that from liver cirrhosis by more than 100%. (By contrast, death rates from cancer are not affected: mortality from tuberculosis, ulcers, and suicide, relatively minor causes of death, is actually decreased.) The increase in mortality accompanying obesity justifies, it seems, calling obesity the "Number One Nutrition Problem" and perhaps even the "Number One Public Health Problem" in Western countries at the present time.

The theoretical importance of obesity as a problem in physiologic pathology is hardly less than its practical significance as a problem in clinical medicine and public health.

It is difficult to discuss abnormal physiology without first describing the normal physiologic processes. In this case, such a description is difficult to make because knowledge of the normal mechanism of regulation of food intake is, at best, sketchy. In the past few years, a theory based on experimental work using men and animals of various species as subjects has been proposed. This "glucostatic theory" which seems not to conflict with the known facts on hunger and the regulation of food intake, has not yet been independently confirmed. It is summarized here because, regardless of its intrinsic value, it provides a basis for integration of the findings on obesity into a coherent whole. Once an attempt has been made at describing the normal physiologic process, the definition of the aberration has to be given. In this case, this can be brief as the notion of obesity gives rise to no serious controversy. The relation of obesity to the normal process of aging must, however, be indicated.

The classic epidemiological approach to the study of disease is to discuss etiology in terms of host, agent, and environment. The etiology of obesity can, similarly, be discussed in terms of hereditary, traumatic, and environmental factors. These will be examined in this order. Rather than separate results obtained in man from those obtained on experimental animals, it appears more appropriate to review them under the appropriate etiologic headings. An attempt at a general synthesis is presented in the concluding section.

Hyperphagia, like fever, is a symptom common to many disturbances of energy metabolism. It can be due to constitutional, traumatic, or environmental factors. More correctly, restating this proposition in terms of Nils Bohr's concept of complementarity rather than in terms of single causation, hyperphagia is due to the interaction between constitutional, traumatic, and environmental factors with one or the other the characteristic element in the etiology.

From the point of view of mechanism, it appears that hyperphagia may be the result of (1) either hypoglycemia or blocks of carbohydrate metabolism, in particular, of the hexokinase reaction, leading to metabolic hypoglycemia of the latero-anterior hypothalamic centers ("feeding center"). Abnormalities of carbohydrate metabolism may be due in turn to endocrine imbalance, where the pituitary, the adrenal cortex, the adrenal medulla, the pancreatic islets, the thyroid, and, indirectly, the gonads may be involved. The role of the equilibrium between the two pancreatic hormones may be of particular importance. (2) Increased lipogenesis, decreased rates of mobilization of fat and metabolic inertia of depot fats; these may in turn be due to tissue factors (enzymatic) or to endocrine or nervous influence on these tissues. (3) Immobilization, which brings the organism below the threshold of proportional response of energy intake to energy expenditure. (4) Autonomic disturbances, such as are produced by central-anterior hypothalamic lesions, and probably by lesions of the thalamus and of association fibers from the frontal lobes. The mechanism of this type of hyperphagia is still poorly understood. (5) Activation, or release of inhibition, of the feeding centers (latero-antero-hypothalamic centers), unaccompanied by metabolic disturbances. Both the depression of the central (obesity) centers and the activation of the lateral (feeding) centers may be partially under the dependence of cortical factors. (6) Psychosomatic factors either mediated through autonomic or nervous disturbances, or acting exclusively at the cortical level.

Obesity is the result of the prolonged action of one or several of these factors. This analytical approach appears to permit some differentiations of the increased risks which are characteristically linked with obesity. These may stem from either associated causative factors or from specific or nonspecific consequences of excessive adiposity. As an example of associated causative factors, one may cite physical inactivity or disturbances of carbohydrate metabolism leading first to obesity and then, in some cases, to diabetes. By contrast, increased surgical risk can doubtless be classified as a nonspecific result of excessive fat deposition, and the increased risk from cardiovascular pathologic changes may be a more specific sequela. (Physiological Reviews, Oct. 1953, J. Mayer)

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Reactions to Procaine Hydrochloride

There are sporadic references in medical literature to untoward reactions resulting from the use of local anesthetic drugs such as procaine. These reactions vary in degree from mild and transient manifestations to fatalities. While there is no general agreement as to the importance of these reactions, they occur sufficiently often to warrant an understanding of their nature by those who use procaine in daily practice. This article

covers the various types of reactions which occur as a result of the administration of procaine. It indicates how to recognize them, how to prevent them, and how to treat them after they occur.

Generally speaking, reactions after the injection of procaine may be divided into toxic and allergic. Toxic reactions, when they occur, result from unusual stimulation of various systems or organs in the body. The most severe manifestations occur because of involvement of the brain and the central nervous system. Under these circumstances, the patient may become unusually apprehensive, nervous, and restless. He may show excessive tremor and twitching, marked excitement, vomiting, delirium, and convulsions. This may be followed by depression and loss of consciousness. The drug may, however, affect the respiratory center, in which case the patient begins to breathe rapidly and respiratory failure occurs. The vasomotor center may be involved. This leads to pallor, tachycardia, falling blood pressure, and fainting. There is no reliable method of anticipating toxic reactions to procaine. If previous injection of procaine has elicited suspicious symptoms, then administration of the drug should be preceded by phenobarbital or preferably by a shorter-acting barbiturate such as secobarbital or pentobarbital. Sodium amytal, 1 to 3-1/4 grains, may be injected intramuscularly. If signs of stimulation of the central nervous system become apparent, then intravenous injection of these short-acting barbiturates is indicated. Artificial respiration and oxygen may be given. Vasopressor drugs that have a minimum effect in the central nervous system are used. These include methoxamine (Vasoxyl) hydrochloride which is given intravenously in 10 mg. doses. The patient's head is lowered to aid circulation to the vital centers. Administration of fluids and carbon dioxide-oxygen mixture is of value. Once the patient has developed some of these toxic symptoms, it is inadvisable to use procaine again for it is reasonable to assume that the toxic reaction will be repeated. Some suitable substitute drug should be employed.

Allergic reactions after the use of procaine may be divided into the following categories: (1) contact dermatitis, (2) serum-sickness pattern reaction, (3) accelerated serum-type reaction, and (4) the atopic reaction.

Dentists occasionally develop local contact dermatitis from using procaine. In these instances, it usually is found that the dentist has been able to use the drug for a long time, but finally became sensitized so that subsequent contact with the drug gave rise to a localized, contact, eczematous allergic dermatitis. This type of sensitivity may be detected by the use of the patch tests. Precautions should be taken to avoid accidental contact of the skin with those surfaces of rubber gloves or other objects which have been contaminated with procaine. A study of the incidence of sensitization among 3,951 Navy dental officers who used procaine during their work indicated 85 instances of allergic contact dermatitis from this local anesthetic.

Serum sickness pattern reaction rarely follows as a result of procaine administration. When it occurs, it is after the administration of the drug for the first time. It is similar to the type of reaction which is seen in patients who are receiving antibiotics such as penicillin or foreign serums. This reaction occurs from 1 to 12 days after the injection. It is characterized by the appearance of a slight fever, hives, joint symptoms, and general malaise. This type of allergic reaction gives no concern. It can be controlled by epinephrine and antihistaminics. In rare and severe instances, a few doses of corticosteroids such as ACTH and cortisone may be employed. It is impossible to predict which patients will develop this type of reaction.

The accelerated serum type of reaction is a much more serious condition and it may be fatal. The symptoms include sudden development of urticaria with servere pruritus, faintness, palpitation, tachycardia, weakness, sweating, dyspnea, cyanosis, fall in blood pressure, shock, and circulatory collapse. Some of these earlier symptoms may be brought about by the epinephrine which usually is mixed with the procaine. This type of allergy comes after the administration of procaine for the second or a subsequent time. This anaphylactic or accelerated serum type of reaction usually occurs quickly after procaine is injected; that is, in a matter of minutes or several hours. It is brought about by previous injection and sensitization and is probably an immunologic reaction. There are no specific pathognomonic findings in the autopsy material. The patient may show pulmonary edema and severe generalized congestion in all organs. Unfortunately, in spite of the fact that previous sensitization with the drug is necessary to bring about this type of reaction, it is not possible to predict its occurrence in a patient by the procaine skin test. This drug is not a protein and will not yield positive reactions when used for intracutaneous testing. An easy practical test may be employed, however, if the possibility of this type of reaction is suspected. A small amount of procaine is applied with a cotton applicator sublingually or to the nasal mucous membrane. The patient waits for 5 to 10 minutes. If no untoward symptoms occur, it is considered safe to assume that he will not develop this serious accelerated type of reaction. Treatment must be instituted promptly in instances of the accelerated reaction. Such treatment includes the administration by intramuscular injection of antihistaminics and epinephrine. Oxygen, sedatives, digitalis, ACTH, and cortisone also are employed.

The atopic reaction manifests itself by the sudden occurrence of nasal and asthmatic manifestations coupled with generalized angioedema and urticaria. This is an immunologic reaction and extremely rare. Procaine is the antigen. Because the drug is a nonprotein substance, it cannot be used for skin testing. A hapten type of antigen is being dealt with in this instance. Such skin tests are of no avail in predicting the possibility of this type of allergy. Here again, if suspected, this sensitivity may be recognized by the applicator test referred to above. Serious allergic manifestations of this kind occur in individuals who have a family history of asthma and a

history of asthma and hay fever themselves. If asthmatic symptoms develop after procaine administration, they should be treated promptly and adequately, sometimes heroically, with epinephrine 1:1,000, 3/10 of a cubic centimeter, subcutaneously or intravenously, ephedrine 3/8 grain, by mouth, antihistaminics, ACTH, and cortisone. Oxygen may be administered. If edema of the glottis and asphyxia develop, then tracheotomy and artificial respiration may have to be employed. The dentist should summon a physician in all instances of such reactions.

It must be emphasized that these extreme reactions are very rare.

Most of the commercial local anesthetics include epinephrine, which prolongs the action of the anesthetic by its vasoconstrictor action. It is for this reason that the patient receiving procaine by injection occasionally may experience some disturbing symptoms, which in reality are caused by the excitatory effect of epinephrine. These are palpitation, tachycardia, and nervousness. For the most part, the reactions are transient, and usually are not serious except in instances of coronary artery disease. In these instances, the epinephrine may produce coronary spasm and anginal heart failure. These manifestations are not toxic or allergic in nature. It is, therefore, necessary that a dentist should inquire, preparatory to the use of procaine containing vasoconstrictors, whether the patient has a cardiac disease. If the answer is in the affirmative, the attending physician should be consulted before injection of preparations containing epinephrine. Although there are instances of allergy to epinephrine, they are so infrequent that there is no need to be concerned with this remote possibility. (J. Am. Dent. A., Aug. 1953, L. H. Criep)

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Explosive Dental Connections

Prestolite or acetylene gas should not be connected to Ritter dental operating units because in the construction of Ritter equipment, a short length of copper tubing is used to connect the gasline in the bracket table to the subbase. Acetylene gas in contact with commercially pure copper tubing, forms unstable compounds such as copper acetylide, which is a detonator. For the same reason, copper tubing should not be utilized to connect blowtorches to acetylene tanks. (Medical Technicians Bulletin, Sept.-Oct. 1953)

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Magnets to Stabilize Dentures

Strong, small, curved permanent magnets are embedded in the maxillary and mandibular complete dentures to help stabilize the dentures. The magnets are placed in such a position that like poles are adjacent. The repulsive force of like polarity pushes the dentures away from each other and helps keep both dentures in place. The retention of the dentures through the magnets is relatively constant, and is not affected by peripheral seal changes. The permanent magnets were developed with the assistance of the General Electric Company.

Patients are not conscious of the increased weight or the repulsive force. The experience of hundreds of patients has been most favorable during the past 19 years.

The technic of placing the magnets can be delegated to any technician who is familiar with their placement. (J. Am. Dent. A., Sept. 1953, H. Freedman)

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Pulmonary Resection in the First Year of Life

Six cases in which pulmonary resection was performed in the first year of life are reported. The conditions necessitating resection were: (1) congenital pulmonary cysts, (2) localized hypertrophic emphysema, (3) chronic, irreversible atelectasis, and (4) bronchiectasis.

It is estimated that bronchiectasis represents about 5% of all diseases in childhood. A considerable number of young adults with established bronchiectasis give a history of productive cough and repeated attacks of pneumonia in the same lobe dating back to infancy. These findings suggest that bronchiectasis may start in the first year of life but is not diagnosed until later. Once established it is a chronic progressive disease with a high mortality and morbidity rate, and, at best, results in a state of semi-invalidism. Infants with this disease, who are symptomatic or are not developing well should be considered for early surgery if the disease is localized. The complications that may be encountered are pulmonary abscess, empyema, metastatic abscess, and recurrent attacks of pneumonia. These complications are more easily controlled and less frequent since the advent of antibiotics. It has been suggested that a noninfected condition of congenital atelectasis and bronchiectasis may have been present before infection in the lung occurs, and it is only when the infective factor is superimposed that symptoms arise. True congenital bronchiectasis is related to cystic disease of the diffuse type and is a rare finding.

Bronchiectasis should be suspected in any infant in whom there is a chronic cough and a history of repeated attacks of pneumonia in the same lobe. Bronchograms, showing bronchiectatic dilatations, will confirm this

diagnosis, but because of the danger of bronchography in infants it is not recommended as a routine procedure.

The diagnosis can usually be suspected from the plain x-ray film. Bronchoscopy is useful to establish the nature and anatomic limits of the infection and may be useful in providing drainage of the bronchial tree in preparing the infant for surgery.

The preoperative preparation consists of the administration of fluids and blood, as may be required by the individual case, of penicillin and streptomycin given intramuscularly, and of aerosol. In cases in which secretions cannot be adequately controlled, tracheotomy is recommended, as it not only is useful in preparing the patient for surgery but makes it possible to clear the tracheobronchial tree safely and effectively after operation.

Fawcett, in 1941, reported a case of bronchiectasis in a 19-month-old baby, treated by lobectomy, with a successful outcome. More recently Mendez and his group have reported 2 cases, 1 in a 2-1/2-month-old infant in whom bronchiectasis was treated surgically with good results. Pulmonary resection in the first year of life is a safe and, under favorable circumstances, an effective procedure. It seems rational, therefore, to remove pulmonary segments involved with bronchiectasis as soon as they are discovered. (Surg., Gynec. & Obst., Oct. 1953, E. S. Crossett and R. R. Shaw)

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Portacaval Anastomosis for Portal Hypertension

In the past 5 years, 30 patients have been subjected to surgery for the relief of portal hypertension. In 20 patients the cause was cirrhosis of the liver, in 8 it was extrahepatic obstruction of the portal system, and in 2 the obstruction was due to a vascular anomaly of the portal veins within the liver. In all patients esophageal varices were present and gastrointestinal bleeding was the chief complaint. In the group with cirrhosis, ascites was evident in 6 patients.

In 5 patients (16% of the total series) the operation was abandoned because of the technical difficulties imposed by large collateral veins or because of the poor condition of the patient. Because all of the procedures were carried out by the same surgeon it is believed that this represents an average experience with this type of operation. In 1 case splenectomy alone was considered sufficient, and in 24 cases a shunt operation was carried out. Of these, 14 were splenorenal anastomoses and 10 were portacaval of the side-to-side type. There were 2 operative deaths, a mortality of 6.6%. One fatality was due to hepatic failure in a patient with cirrhosis and the second was due to hemorrhage from peptic ulceration of the esophagus. Both deaths occurred in patients in whom a shunt operation had been abandoned.

From this limited experience, it appears that the portacaval shunt has several defects in the treatment of portal hypertension. It corrects only one of the factors responsible for bleeding from esophageal varices and it does reduce the blood supply to the liver.

The majority of patients in this series have received immediate benefit in the regression of esophageal varices and the cessation of gastrointestinal bleeding. This improvement has been temporary in most cases and nearly all of the patients with cirrhosis have shown evidence of increasing hepatic damage within 1 year or less. Three of seventeen patients in this group have remained well for more than 2 years.

In patients with extrahepatic portal obstruction the results have been slightly better; all have benefited immediately and in 3 of 7 the benefit has been lasting.

The chief concern in patients with cirrhosis has been that of depriving the liver of a portion of its blood supply, and an attempt has been made to obviate this by grafting a systemic artery into the proximal stump of the portal vein. An experimental animal can live with an arterialized portal vein as the sole source of liver circulation and show no impairment of liver function. Unfortunately, no successful operation of this nature has been carried out in a human being.

In the patients who did not have cirrhosis, the operation of splenectomy, high subtotal gastric resection with vagotomy, and periesophageal vein ligation has been carried out in 2 patients with immediate excellent results. It appears likely that relief of hypertension alone will not be adequate in all cases of bleeding esophageal varices and it would seem rational to correct, in addition, the factors of acid regurgitation and hypersplenism. No single operation is ideal in this condition and it is only by analysis of long-term results that the many procedures advocated can be properly evaluated. (Surgery, Sept. 1953, C. B. Ripstein)

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The Use of Peritoneum as a Substitute for Conjunctiva in Plastic Surgery

Peritoneal mucosa, particularly omentum, had several desirable characteristics to recommend it as a substitute for conjunctiva. It was moist, transparent, relatively easily separated from its submucosal tissue, and was available in sufficient quantity to replace the entire conjunctiva of one or both eyes, if necessary. Furthermore, according to abdominal surgeons, with present techniques the elective removal of a piece of omentum from a normal abdomen should not appreciably increase the surgical risk of an extensive reconstruction of a large conjunctival defect; neither should it prolong the convalescence. Therefore, peritoneum was used as a substitute for conjunctiva in 2 cases of severe contraction of the socket and, later, in 2 other patients in an effort to prepare them for corneal transplantation operations.

In each of the 4 cases, the patient was examined preoperatively by the abdominal surgeon who later removed the omentum, and by the anesthetist as well as the ophthalmologists. Consent for the operation was taken only after the general examinations had been found satisfactory and the patient had been warned of the possible hazards and risks.

At the time of operation, the abdomen and the eye were prepared simultaneously. The surgical team obtained the piece of omentum through a small muscle-splitting incision and placed it on a sterile saline-soaked gauze sponge. The omentum and gauze then were placed in a sterile, covered beaker until needed. As the surgeon was closing the abdomen, the ophthalmic team began its work on the eye.

The patient was allowed to sit up the day after the operation and to be up as desired, thereafter. In each case the abdominal wound was healed and the surgeon's duties completed by the seventh postoperative day.

The use of peritoneal mucosa as described herein has not been devised as a replacement for procedures employing other mucosal substitutes for conjunctiva but rather as a supplementary technique to be used only in cases in which the other methods do not provide an adequate amount of mucous membrane. (Am. J. Ophth., Sept. 1953, J. H. Allen)

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Diabetic Retinopathy Treated With Testosterone

Of the degenerative changes of diabetes mellitus, retinopathy is one of the more serious for the patient and has been the subject of increasing study in the past few years.

Much progress has been made in knowledge of the pathology and the specificity of the lesion. It has been demonstrated that the characteristic lesion of diabetic retinopathy is the capillary aneurysm. These aneurysms appear as pinpoint dots, which were previously thought to be punctate hemorrhages. Punctate hemorrhages do occur and are difficult to distinguish ophthalmoscopically from the aneurysms. The hemorrhages tend to change fairly rapidly, while the aneurysms remain unchanged for longer periods. Other retinal hemorrhages, of varying sizes, may be located in the superficial or the deep layers of the retina. New hemorrhages tend to occur in showers. Hard, yellowish, discrete exudates may also be seen, as well as phlebosclerosis. Diabetic retinopathy is generally progressive, but remissions occur. This makes evaluation of therapeutic measures difficult.

Saskin, Waldman, and Pelner reported favorable results from treatment of diabetic retinopathy with testosterone propionate, using as a criterion of change only the punctate hemorrhages. Because of this report and because no previous treatment has been proved effective in this disease, it was decided to study and treat a group of patients with this drug.

The rationale for the use of testosterone may be stated as follows: There is reason to believe that abnormalities of liver function are a factor in diabetes mellitus. It has long been recognized that normal hepatic function is essential to proper sugar, protein, and sex hormone metabolism. There is evidence of abnormal protein metabolism in diabetes mellitus if the disease is poorly regulated or if retinopathy is present. The administration of testosterone propionate favorably affects protein metabolism and results in a positive nitrogen balance. Testosterone may exert a beneficial effect also on liver function. Furthermore, diabetic retinopathy is more frequent, more severe, and more progressive in the female than in the male.

Seventy-seven patients, of both sexes, with diabetic retinopathy were selected from the metabolic clinic of the Philadelphia General Hospital for this study. Twenty-six patients received saline injections, and 51, either testosterone or a combination of testosterone and estradiol in weekly intramuscular injections. The patients had periodic funduscopic examinations during the course of treatment and at the end of therapy (approximately 20 weeks).

The results of the study are described and discussed.

The following conclusions are drawn: (1) Hormone therapy with testosterone propionate or testosterone propionate and estradiol in weekly intramuscular injections, given for 5 months under the conditions of this study, was not demonstrably more effective in the control of diabetic retinopathy than were weekly injections of saline. (2) The data indicate that weight, race, duration of diabetes, and type of insulin did not affect the results of treatment. The effects of the patient's age and the insulin dose were equivocal. (Arch. Ophthalmol., Sept. 1953, R. H. Bedrossian, D. S. Pocock, W. F. Harvey, Jr., and A. S. Sindoni)

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Study of the Fundus Oculi of Human Subjects Under Positive Acceleration

Blackout is a state wherein the pilot of an airplane cannot see even though his other faculties, for example, hearing, feeling, and thinking, are still functioning satisfactorily. It has been known for some time that this unpleasant state of affairs is likely to occur in a pilot in such maneuvers as during a pull-out from a dive-bombing run. Investigators have evidence to prove that the blood becomes "heavy" under these conditions, and when the effective limit of the pumping system (heart and large arteries) is reached, the blood cannot circulate to the vital head regions of the body.

There has been some doubt as to just where the major changes occurred during blackout. Some have argued that the trouble lies in the eye--

comparable to a television camera. Others have stated that the difficulty lies in the portion of the brain which does the "seeing" and is comparable to a television receiver screen.

On the 50-foot human centrifuge at the Naval Aviation Medical Acceleration Laboratory, Johnsville, Pa., the conditions of a pilot in a plane were duplicated. The investigator was positioned at right angles to the accelerative force so that the blood did not tend to drain out of his head. With an instrument, he watched the back of the subject's eye and saw the blood drain away from this area. Based on these findings, it would appear that the difficulties encountered during blackout are due to local changes in the eye. Drawings which were made of these observed changes by a medical artist positioned the same as the investigator, should prove advantageous to scientists working on this problem. The appearance of these changes may be used as an index for the physiological effects of the G stress. Similar observations were made on monkeys and chimpanzees, and the same results obtained. (NM 001 060.12.01, Phase III, U.S. Naval Air Development Center, Johnsville, Pa., 1 July 1953, LT T. D. Duane (MC) USNR)

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Effect of X-Irradiation on the Immunity of Mosquitoes to Malarial Infection

For obvious reasons it has become increasingly important to study the biological effects produced by various exposures to ionizing X-irradiation, to try to understand the fundamental nature of the physiological changes which produce these effects, and to find the means or methods whereby these effects may be counteracted. It was the purpose of the studies currently reported in the paper entitled "The Effect of X-Irradiation on the Immunity of Mosquitoes to Malarial Infection" to try to gain some understanding of the effects of moderate and high doses of X-irradiation on the inherent reaction of an animal to an infectious agent. For reasons enumerated in the report the malarial infected mosquito lends itself particularly well to such a study in which the investigator is concerned primarily with the phenomenon of natural immunity rather than with the factors associated with an acquired immunity. In essence, it has been shown in this study that although moderate and heavy doses of irradiation produce certain deleterious effects and markedly shorten the life span of the mosquito Aedes aegypti, nevertheless, these same dosages of irradiation also markedly increase the resistance of this host to infection by the malarial parasite Plasmodium gallinaceum. In addition, it was shown that certain biochemical agents such as penicillin and sulfadiazine, are capable of reversing the effects of irradiation on immunity, thus re-establishing the normal host-parasite relation. From these specific results one may draw the more

important general assumption that the net effect of X-irradiation is to change the biochemical balance of the body and that this normal physiological balance may be restored by appropriate biochemical means. Thus, there is reason to believe that it may be possible eventually to characterize the specific effects of ionizing irradiation, and the exact nature of the biochemical changes associated with these effects, and having done this, to devise rational therapeutic measures against X-irradiation damage. (NM 005 048. 10.01, Naval Medical Research Institute, Bethesda, Md., 26 May 1953, L. A. Terzian)

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Surgeon General's Symposium

The Surgeon General's Symposium with senior officers of the Medical Department will be held at the National Naval Medical Center, Bethesda, Md., Nov. 5-7, 1953.

This Symposium affords an opportunity for the Medical and Dental officers commanding the various Navy Medical Department facilities throughout the world to meet and discuss the problems associated with the effective and efficient operation of the Navy Medical Department. Personnel procurement, finance, hospital administration, planning and logistics, and the many problems of a current and recurrent nature associated with the operation of a military medical department will be discussed. In addition, the latest developments in the field of military medicine will be presented.

The Assistant Secretary of Defense for Health and Welfare, Doctor Melvin A. Casberg, will present an address entitled, "The Armed Forces Medical Program." The Surgeon General, Rear Admiral Lamont Pugh, will address the group and an address of welcome will be made by the Commanding Officer of the National Naval Medical Center, Rear Admiral L. O. Stone (MC) USN.

Rear Admiral Clarence J. Brown (MC) USN, Deputy and Assistant Chief of the Bureau of Medicine and Surgery, will be Chairman of the Symposium and will preside over the Medical Panel discussions. Rear Admiral D. W. Ryan (DC) USN, Assistant Chief for Dentistry and Chief of the Dental Division, will preside at the Dental Panel discussions.

Other senior naval officers scheduled to speak at the Symposium include Rear Admiral K. M. McManes, USN, Assistant Chief of Naval Operations (Naval Reserve); Inspector General, Medical, Rear Admiral F. C. Greaves (MC) USN; the Assistant Chief for Personnel and Professional Operations, Rear Admiral J. Q. Owsley (MC) USN; the Assistant Chief for Planning and Logistics, Rear Admiral T. F. Cooper (MC) USN; and the Pacific Fleet Surgeon, Rear Admiral B. W. Hogan (MC) USN. (TIO, BuMed)

From the Note Book

1. Rear Admiral Lamont Pugh, Surgeon General of the Navy participated in the opening ceremonies of the Seventh Interagency Institute for Federal Hospital Administrators conducted at Walter Reed Army Medical Center, Oct. 26, 1953. Navy medical officers nominated to attend the Institute are: Captains A. C. Abernethy, R. A. Bell, R. A. Cooper, C. L. Ferguson, W. M. Silliphant, and R. L. Ware. (TIO, BuMed)

2. Rear Admiral Clarence J. Brown (MC) USN, Deputy Surgeon General and Assistant Chief of the Bureau of Medicine and Surgery represented the Navy at the Sixty-Fourth Annual Meeting of the Association of American Medical Colleges, meeting in Atlantic City, N. J., Oct. 26-28, 1953. (TIO, BuMed)

3. Rear Admiral Daniel W. Ryan (DC) USN, Assistant Chief for Dentistry and Chief of the Dental Division, left Washington, D. C., Oct. 2, 1953 by Military Air Transport for Europe and the Mediterranean area. Admiral Ryan will visit naval activities in England, Germany, and Italy, and will discuss with command personnel matters relative to the naval dental service at the various activities visited. (TIO, BuMed)

4. The role of the radiologist in the event of an atomic attack is discussed in Radiology, Aug. 1953, J. J. Stein, A. W. Bellamy, A. H. Dowdy, and S. L. Warren.

5. The therapeutic management of malignant soft-tissue tumors of the extremities may be simple and uncomplicated, but also may become a most difficult and perplexing situation, particularly when the tumor has approched the border-line of curability by metastasizing to the regional lymph nodes. There seems to be no unanimity of opinion as to the ideal therapeutic methods that should be utilized. (Arch. Surg., Sept. 1953, E. A. Lawrence, J. W. Dickey, and F. Vellios)

6. From a study made by the authors it is concluded that 1 million units of aqueous procaine penicillin G and 1 gm. of dihydrostreptomycin sulfate given intramuscularly every 12 hours for 2 weeks represents adequate and curative treatment for subacute bacterial endocarditis caused by penicillin-sensitive streptococci. (Circulation, Oct. 1953, J. E. Geraci and W. J. Martin)

7. A case of an extremely rare developmental anomaly, situs inversus of the stomach with the other viscera in a normal position is reported in Radiology, Sept. 1953, M. A. Almy, F. H. Volk, and C. M. Graney.

8. The present status and future possibilities of a vaccine for the control of poliomyelitis are discussed in the American Journal of Diseases of Children, Sept. 1953, A. B. Sabin.

9. Twenty-five human cases of ovarian rete cysts are reported. Only 5 were recognized macroscopically. Others were microscopic and lined with an epithelium characteristic of rete tubules. (Am. J. Path., Sept.-Oct., 1953, S. C. Sommers)

10. Experience with tryptic aerosol as a digestant of sputum in 17 patients with respiratory conditions is presented in Diseases of the Chest, Sept. 1953, J. L. Yates and B. E. Goodrich.

11. The records of 280 patients with neoplasms of the parotid gland have been reviewed. These have been reclassified recognizing serous cell adenoma, serous cell adenocarcinoma, and acidophilic gland-celled carcinoma which were separated from the general group of parotid tumors and described as entities. (Surg., Gynec. & Obst., Oct. 1953, R. W. Buxton, J. H. Maxwell, and A. J. French)

12. A recent review of severe lye corrosion of the esophagus discloses that after ingestion of lye 58% of patients experienced severe dysphagia within 1 month, 80% within 2 months, and approximately 99% of those in whom significant stricture eventually developed did so within 8 months. (Arch. Otolaryng., Sept. 1953, Capt. V. M. Smith, MC, USA, Maj. J. R. Compton, MC, USA, and Lt. Col. E. D. Palmer, MC, USA)

13. Certain physiologic, pathologic, and surgical features of complete transposition of the aorta and pulmonary artery are discussed in Surgery, Sept. 1953, C. W. Lillehei and R. L. Varco.

14. The Knott technic of blood irradiation is a safe and efficient method of rapidly controlling acute deltoid bursitis and is also a safe and efficient method of treating chronic deltoid bursitis. (Am. J. Surg., Oct. 1953, G. P. Miley and A. A. Laplume)

15. The histologic appearance of the skin lesions of lymph nodes while not pathognomonic is suggestive of cat-scratch disease, but may be mistaken for tularemia, lymphopathia venereum, or sporotrichosis. (Am. J. Clin. Path., Oct. 1953, T. Winship)

16. Studies of crushed ice dispensed into iced drinks over a period of years showed that the ice often failed to meet a desirable sanitary standard. A comparatively simple technic for chlorinating the crushed ice prior to dispensing has been developed. (Am. J. Pub. Health, Oct. 1953, E. W. Moore, E. W. Brown, and E. M. Hall)

BUMED INSTRUCTION 1530.1A 16 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: Distribution List

Subj: Aviation selection tests; information concerning

This instruction provides information relative to the administration of the revised naval aviation selection test battery. This instruction becomes effective on 2 Nov 1953 at which time BuMed Inst. 1530.1 will be cancelled.

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BUMED INSTRUCTION 7303.7 18 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Activities Under Management Control of the Bureau of Medicine and Surgery

Subj: Report of Specific Work Requests (Reports Control Symbol MED-7303-1)

Ref: (a) NavCompt Manual, Vol. 3, Chapter 2
(b) NavCompt Manual, Vol. 2, Chapter 2
(c) BuMed Inst. 4700.1A

Encl: (1) Format for report of specific work requests

This instruction is issued to inform activities holding allotments for work request programs under the appropriation, Medical Care, Navy, of the financial reports required by the Bureau for funds issued to finance the work request programs.

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BUMED INSTRUCTION 6320.13 23 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals, Except Yokosuka
U.S. Naval Dispensaries
All Continental Stations Having Infirmaries or Dispensaries

Subj: Report of Staffing Ratios at Medical Treatment Facilities (Report Symbol DD-OMS-3)

This instruction promulgates current information concerning the number of personnel utilized at specific medical facilities, and indicates the format to be employed in submission. BuMed C/L 51-124 is cancelled. Article 23-183, ManMedDept, which is no longer current, will be cancelled at a later date.

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BUMED INSTRUCTION 6220.1 24 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Corps Personnel Regularly Assigned

Subj: Influenza detection

Ref: (a) Art. 23-122, ManMedDept

Encl: (1) List of Special Laboratories and Designated Collecting Stations

This instruction sets forth procedures to be used in the detection of influenza in personnel of the Armed Forces throughout the world before epidemic proportions are reached.

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BUMED NOTICE 6120 29 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: Commanding Officers, All Naval Hospitals Having Audiometers

Subj: Pitch-memory test for sonarmen

Ref: (a) BuMed Notice 6120 of 26 Jan 1953

This Notice clarifies the intent of reference (a) in order to prevent unnecessary duplication of pitch-memory testing facilities.

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BUMED INSTRUCTION 1550.1 29 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: BuMed Management Control Activities

Subj: Training materials; use of by foreign students

Ref: (a) OpNav Inst. 1550.1 of 8 May 1951 (originally numbered 150.2A)

Instructions concerning the handling of materials used by foreign students in training in Medical Department activities are provided. BuMed C/L 51-99 of 26 Jun 1951 is superseded. The enclosure thereto, which is reference (a) above, should be retained.

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BUMED NOTICE 6230 1 Oct 1953

From: Chief, Bureau of Medicine and Surgery
To: Commander-in-Chief, U.S. Naval Forces Eastern Atlantic and Mediterranean
Commander, U.S. Naval Forces Far East
Commander, U.S. Naval Forces Marianas
Commander, U.S. Naval Forces Philippines
Commandant, Seventeenth Naval District

Subj: Influenza vaccine; use of

This notice provides information concerning utilization of influenza vaccine for military personnel in certain overseas areas.

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BUMED INSTRUCTION 5600.2A 2 Oct 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical-Dental Personnel Regularly Assigned

Subj: Research and other professional articles; expenses in connection with

This instruction outlines the requirements of the Bureau with respect to the obligation of funds in connection with research and other professional articles. BuMed Inst. 5600.2 is cancelled.

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BUMED INSTRUCTION 6150.12 2 Oct 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical Department Personnel Regularly Assigned

Subj: Health Records; recording of defects in

Ref: (a) Chapter 16, ManMedDept
(b) Section 4, Act of August 27, 1940, (Naval Aviation Personnel Act of 1940) as amended, (34 U.S.C. 855c-1)
(c) Title IV, Act approved October 12, 1949, (Career Compensation Act of 1949) (37 U.S.C. 271 et seq)

This instruction emphasizes the need for proper entries in Health Records in the cases of members of the naval service who present evidence of ill health, defects, or disability.

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AVIATION MEDICINE DIVISION

Membership in the Aero-Medical Association

Aviation medicine is a highly specialized branch of the practice of medicine. It is continually advancing the study of the protection of the health and safety of flyers, crewmen, and passengers. The Aero-Medical Association has been dedicated, since its beginning, to the advancement of aviation medicine. Recently the attainment of certification in aviation medicine as a part of the Board of Preventive Medicine has been an achievement due to the efforts of the Aero-Medical Association. It would appear that with these attainments by the Association it would not only be of personal benefit but an obligation for all Naval Aviation Medical Examiners and Naval Flight Surgeons to become members of the Aero-Medical Association.

Local chapters or branches of the Aero-Medical Association are being organized throughout the United States where either the practice of aviation medicine or research in aviation medicine is active. These groups hold regular meetings and discuss late developments. As a member of the Aero-Medical Association it would be possible to be an active member of one of these groups and participate in very interesting and informative meetings and so keep abreast of the latest developments in the field of aviation medicine.

Membership may be had for a very nominal fee. The official publication of the Aero-Medical Association, The Journal of Aviation Medicine, is included in this annual membership fee. Contact Thomas H. Sutherland, M. D., P. O. Box 26, Marion, Ohio in applying for membership. Join the Association now and help make its silver anniversary the greatest year it has ever had.

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Defects Noted on SF-88's Submitted to BuMed: August and September 1953

Omissions	192
Excess copies	120
Lack of copies	52
Carbon copies not legible	246
Carelessness in recording results	54
Item No. 17 omitted	104
Not fully explaining dental defects of NavCad applicants	4
Not recording C. E. R. and improperly placing pulse in spaces	52
Refractions not properly recorded	11
Not leaving right side in column 73 for BuMed endorsement	63
Failure to state aviator's service group in recommendation	40
No reason given for hospitalization	11
Failure to mention disqualifying defects on SF-89	17
Failure to submit SF-89	1

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Motivation Among Student Aviators

In the years since the onset of hostilities in Korea, national interest has focused frequently upon the problem of motivation among flying personnel. A number of widely-reported incidents have served to highlight the issues involved. On the whole, the general impression has been gained that our young men are unwilling or afraid to fly. This point of view has received sustenence, too, from the apparent difficulty the services have faced in recruiting sufficient numbers of aviation trainees. Whatever popu-

lar magazine articles may have indicated, however, the plain fact is that the problem is neither as simple nor as one-sided as would appear.

With this motivation problem literally at its doorstep, the U.S. Naval School of Aviation Medicine has devoted a sizeable part of its research activity to a study of motivation among Naval Aviation Cadets. During the past 3 years, the Aviation Psychology Laboratory at the School has initiated and maintained a variety of projects in this area. The goals of this research are two-fold: first, to make recommendations to the Training Command concerning the maintenance of high motivation among the cadets; second, to develop specialized techniques for the measurement of motivation at the selection level. These dual areas of research will be discussed separately.

The core of the first phase of this research program has been the use of an intensive interview technique with cadets voluntarily leaving the Training Command. It has been assumed, with good reason, that men who withdraw from training represent an inadequately motivated group. While this is not always true, interviewing withdrawal cases frequently affords penetrating insight into the factors which tend to cause motivation.

This research has unearthed the following reasons reported most frequently by cadets leaving the program: (1) Dislike of flying. This category includes cases of fear, airsickness, boredom, and lack of confidence in handling the airplane. (2) Dissatisfaction with the Naval Reserve policy. Principally, this involves the length of time required to serve on active duty as well as the time during which the individual may be subject to call in the future. Because the men who withdraw tend to be older, this reserve time factor may be more significant to them. (3) Outside social pressures. This consists of family fears of flying, girl involvements, job opportunities, and the desire to continue college. In addition, there exists the ever-present consideration of variations in the draft law and fluctuations in the tide of the international situation. (4) Dislike of military life. This includes the common complaints about military life such as restricted freedom and regimentation. Other factors such as inconsistent discipline, boredom from waiting, and objections to certain instructional techniques were also mentioned within this category. (5) Personality maladjustment. Men in this category showed signs of disturbance, not only about flying, but about life in general. Fortunately there are few men in this category.

This material was immediately useful in tapping sources of dissatisfaction, internal and external to the training situation, which then was submitted in report form periodically to appropriate authorities in the Training Command. In a number of instances these interviews with withdrawing cadets have been recorded--anonymously and with their knowledge--and then have been played for cognizant authorities in the Training Command. It appears that the emotional toning added to words spoken by a human voice has a greater impact than these same words reproduced on paper. A secondary value of these interviews is the fact that the material obtained may be use-

ful in the development of new selection devices which, it is hoped, will ultimately be successful in evaluation of motivation at the input level.

Supplementing the program of interviews with withdrawing cadets, a continual study has been made of interview material gathered from cadets who have successfully completed flight training. These data serve as a control on the material obtained from the withdrawing cadets. In many instances, the complaints of withdrawing cadets are echoed by the successful cadets. The major differences between these two groups, however, is concerned with flying. That is, while the majority of the withdrawal group actively dislike flying, most of the successful cadets derive considerable satisfaction from flying.

Finally, a number of attitude surveys have been conducted among cadets in training in order to determine their relative state of morale with respect to Naval Air Training. A summary statement about the findings of this research must of necessity be brief. However, it may be said that the findings reveal that the bulk of the cadets have entered training as a result of the draft law and would prefer not to be in service. If this is viewed as a problem within all the society, it no longer seems surprising. The obvious lack of enthusiasm in this country for the Korean War probably is related to this finding. None of the research undertaken, however, has indicated in any way that young Americans have been less patriotic or less willing to make sacrifices than were their elder brothers of World War II. Furthermore, very recent data indicate that actual success in completing the program is not systematically related to compulsory military service.

The end result of the first phase of this research program has been to acquaint the Training Command with objective information concerning cadet motivation as it relates to recruitment and training. In many cases, the Training Command has taken appropriate action to bring about changes in local conditions which have correspondingly affected motivation positively. This assertion is not based on speculation but the scientific fact that since 1950 the over-all attrition rate has decreased approximately 20%. In terms of dollars saved the American taxpayer this recent decrease in attrition represents millions of dollars. Even in the face of what might be thought of as a poor motivation situation today, the reality of the matter is that attrition from the Training Command during the recent past has been no higher and in many instances, lower than it was during the height of World War II.

The second problem area mentioned earlier was that concerned with the development of specialized selection devices for the evaluation of motivation at the procurement level. This phase of research has been based upon several fundamental studies of the differences in certain attitudes held by cadets who withdraw from training and those who successfully complete the program. These have involved the use of a number of attitude inventories and questionnaires. It has been found, for example, that cadets who withdraw tend to have substantially different attitudes toward instructors--both civilian and military--than do cadets who are successful. Furthermore, it has been found that in the case of a variety of basic social issues there are

differences between these groups which may be utilized as the basis for the construction of selection tests. In this respect, a long-range study has been carried out with a series of 120 attitude items which were related to a variety of social institutions and groups. Items included dealt with the family, education, government, our allies, military service, modes of occupation, and so forth. In each case, the subjects were asked to indicate the extent to which they agreed or disagreed with the attitude statements. It was found that about a third of these items discriminated significantly between successful cadets and unsuccessful cadets. These results permitted the construction of a 40-item attitude inventory which seems to have excellent potentialities as a new selection device. Preliminary validation of this new form, with another sizeable sample of cadets, indicates significant predictability between the withdrawal and successful groups. This recent finding suggests that, in the course of time, this form may serve as the basis for a new test in the cadet selection battery. Should this test fulfill its promise, it is anticipated that the withdrawal rate in training would become minimal.

All considered then, the investigators at the U.S. Naval School of Aviation Medicine believe that a contribution has been made to the problem of maintaining motivation among flight personnel. The primary points which have emerged from these research studies bear emphasis:

1. It has been found that there are detectable differences between cadets who withdraw from training and those who remain in training.
2. Where there are common complaints among both the withdrawal and successful cadets, the School has reported these to the Training Command.
3. As a probable result of this program, a marked decrement in the attrition rate over the past few years has been noted with a resultant saving to the taxpayer.
4. From research on attitude differences between high- and low-motivation cadet groups, the beginnings of a motivation selection test have been evolved.
5. The research indicates that while motivation is a problem, it is not nearly so grave or pervasive in character as we have been led to believe by popularized articles. (U.S. Naval School of Aviation Medicine, NAS, Pensacola, Fla., E.P. Hollander and J.T. Bair)

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Anoxia

Pilot's Narrative of an Anoxia Experience

During a 50-minute flight, severe anoxia was experienced resulting in at least partial loss of consciousness. Below are relevant factors as remembered by the pilot.

"1. a. The object of the relevant flight was for the writer to climb to 30,000 ft. in F9F-5, in company with a chase plane. This officer intended to observe air-flow characteristics during high-power level-flight runs, and powerless glides under certain conditions of skid. No accelerations were made on the airplane prior to the following incident. Total flight duration was fifty (50) minutes.

"b. Oxygen supply was checked at 1,700 lb. per sq. in. and blinker functioned normally before take-off.

"c. Take-off was carried out with oxygen in the normal position, canopy open.

"d. Cockpit pressurization was left off until 5,000 ft. of altitude was reached.

"e. Aircraft was then climbed to 30,000 ft.

"f. I leveled out at 30,000 ft. About 3 minutes later I noticed undue difficulty in maintaining accurate speed. Engine temperature and pressure gauges all appeared normal, cockpit felt slightly hot, but reasonably comfortable, stomach felt upset, though not noticeably, because of excess gas, thinking was slow but head felt steady enough. Heat could not be changed with cabin heat control. It was then decided to check oxygen. (A normal habit is made of making a complete oxygen and pressurization check between 30 and 35 thousand ft.)

"g. Approximately the same time the oxygen check was started, the chase pilot requested me to fly at a different speed. This was found even more difficult for no apparent reason, and after ascertaining that the blinker was working, fingernails were normal appearing, and oxygen connection was secure, both hands were placed on stick to help stabilize speed. At this point, as near as can be recalled, I suddenly started to become weak and decided to take off half power and start a gentle dive. The thought occurred to open dive brakes and go to 100% oxygen, but apparently it was too late for action other than reducing power. Just before starting dive an attempt was made to contact the chase pilot. After starting the dive and on reaching .85 I again attempted to contact the chase pilot. (On seeing the figure .85 it is now fairly well remembered that it was attempted to gently make the dive more shallow.) On both these occasions no reply could be read, though voices could be heard. The word anoxia was read but this may have occurred later. On hearing this word the thought occurred that the chase pilot must also have suffered anoxia and was in trouble.

"h. The next point that can be distinctly recalled is being close to cloud and trying to get wings level with the horizon and establishing the original angle of dive. The power was set at 70%, and both hands were on the control column. The only impression that can be remembered of the dive itself was that it appeared exceedingly difficult to maintain a fixed-angle dive.

"i. On passing through the bottom layers of cloud, turbulent air was encountered and the resultant buffeting caused severe pain in the small of my back. (At the time of writing, back is still painfully stiff.)

"j. Altitude was checked in level flight at about 3,000 ft. about 30 miles from where expected to be. I felt uncomfortable and slow in thought, but not dizzy. 100% oxygen was placed on and after finding that the chase pilot was not in company, attempts were made to contact him, or base. I then headed for the base.

"k. On the way to the base, the chase pilot was heard to state that I had dived into the ground nearby. This came as something of a reviving shock and it was again attempted to contact base, with no apparent success. Subsequently transmissions involved in the search for my aircraft could be clearly read.

"l. On arrival into the circuit, normal procedure was followed. Tower asked repeatedly for the aircraft's bureau number and the pilot's name. This was of considerable help in driving home the fact that I was not considered completely capable and caused increased concentration on the landing, and landing checks, which were reasonably normal except that dive flaps had been left on for most of the circuit and had to be extracted on final approach.

"m. During flight, the cabin altimeter was not checked. Also, the oxygen was not touched after it was initially checked on the ground. At point of return to hangar area oxygen content checked at 1,100 lb. per sq. in. and cockpit pressurization system was inoperative.

"n. After stopping the aircraft, body felt weak, but, though head ached slightly and felt thought process to be slow, no marked dizziness was evident. Some 3 hours after the flight elapsed before feeling completely normal.

"o. After the incident, retired early and tried to mentally reconstruct the flight. This morning, seemed to have a much clearer conception of what had happened and much more convinced that complete loss of consciousness did not occur during the descent.

"p. Previous experience with oxygen excess, or lack, includes two incipient losses of consciousness during rapid climbs. On both occasions the oxygen tube had become detached and on noticing loss of some faculties, accompanied by a general dull feeling, the tubes were replaced and recovery was very rapid. On both occasions this occurred at around 26,000 ft. after a straight 6- or 7-minute climb from ground level. Also, hyperventilation has been experienced by experimenting in pressure chambers, and breathing deeply of fresh air. The impression gained was that the head first feels very dizzy, followed by graying to blackout vision, and a ringing sensation in the ears.

"2. Conclusions

"a. It is personally felt that the majority of evidence points to lack of sufficient oxygen. Alternatively, hyperventilation may have occurred, caused primarily by an over-heated cockpit, with the symptoms being hidden by exertion in attempting to fly an accurate speed.

"b. It is considered that if complete consciousness was lost, it was only for momentary periods. In trying to fly by the horizon and to keep above the stall and below critical mach speed, with little to go by but hazy glimpses

of apparent horizons, the various maneuvers of the aircraft witnessed by the chase pilot are thus explainable as well as the fact that recollectable consciousness was regained doing the same type of dive that it had been determined to do from the start, with partial power and both hands on the stick.

"c. The action of the tower in having me repeat the bureau number of the aircraft and my name is considered to have helped considerably in increasing my alertness prior to landing.

"3. Reasoning

"If no oxygen was being received at any time it seems almost certain, based on the experience in other aircraft, that symptoms would have been noticed on the climb. The fact that 30,000 ft. was reached and maintained in level flight for a short period without noticeable discomfort, in what must have been a very hot cockpit with the cabin pressurization system inoperative, indicates dulled senses and the use of at least some oxygen. Surely hyperventilation would have been associated with noticeable erratic senses before the unconscious or semiconscious state was reached. The fact that memory of the oxygen check at 30,000 ft. recalls that my fingernails appeared o. k., boosts the hyperventilation theory but does not explain the subsequent very long recovery period, unless a complete unconscious state existed for a long period with a very slow breathing rate.

"4. Final

"It is believed that the experience has given me a much better chance for the future of combatting oxygen problems. The flight itself caused me no particular worry, being in a somewhat paralyzed state; but it must have been a memorable experience for the chase pilot to see a very expensive aircraft and a fellow pilot on a straight one-way ticket for no apparent good reason."

Signature of pilot.

Minute I

"Since writing this report a period of approximately 35 minutes has been spent in the decompression chamber. While in the chamber a climb to 43,000 ft. was simulated, followed by a descent to 32,000 ft. where 3 minutes were spent attempting to hyperventilate. A further descent was made to 30,000 ft. where my oxygen mask was removed for 1 minute, and then a descent was made to 20,000 ft. where the mask was removed for 5 minutes. This exercise served to make me even more convinced that anoxia was suffered during the subject flight. No unusual sensations were experienced with oxygen mask on. The attempt to hyperventilate by deep very rapid breathing at 32,000 ft. did produce some dizziness that appeared quite easily detectable. Taking off mask for 1 minute caused a dulling sensation, and the same type of inability to concentrate on more than one thing at a time that was experienced during the flight. Writing was not completely

normal after 30 seconds and a gradual feeling of decreasing awareness was experienced. The 5-minute mask-off period at 20,000 ft. caused me to reach approximately the same state of anoxia with related sensations, that was experienced at 30,000 ft."

Signature of pilot.

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NOTICE

The Aviation Medicine Division of the Medical News Letter is primarily intended to disseminate information to aviation medicine specialists in the field. Therefore, if anyone desires to write an article or submit an item for publication in this section of the News Letter, the Aviation Medicine Division Editor will be pleased to receive such material.

Articles and other items of interest to aviation medicine specialists should be addressed to: CDR F. B. Voris (MC) USN, Code 536, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

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